IS 11271 (1985): Groundnut Planter [FAD 21: Farm Implements and Machinery]

BLANK PAGE

IS : 11271 - 1985
(Reaffirmed 2001)

Indian Standard

SPECIFICATION FOR GROUNDNUT PLANTER

UDC 631·332·8 [633·368]

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3

December 1985

Indian Standard

SPECIFICATION FOR GROUNDNUT PLANTER

Sowing, Fertilizer and Manure Application Equipment Sectional Committee, AFDC 59

Chairman	*Representing*
DR T. P. OJHA	Central Institute of Agricultural Engineering (ICAR), Bhopal
Members	
SHRI V. W. AMBEKAR	Directorate of Agriculture, Government of Uttar Pradesh, Lucknow
SHRI GIRISH KUMAR (*Alternate* I)	
SHRI JAGDISH PRASAD (*Alternate* II)	
SHRI J. S. ATWAL	All India Co-ordinated Research Project for Dry-land Agriculture, Hyderabad
DR BACHCHAN SINGH	G. B. Pant University of Agriculture & Technology, Pantnagar
SHRI C. BALASUBRAMANIAM	National Engineering Corporation (M) Private Limited, Madras
SHRI N. K. BANDYOPADHYAY	Directorate of Agricultural Engineering, Government of West Bengal, Calcutta
SHRI S. P. BANSAL	Directorate of Agriculture, Government of Haryana, Chandigarh
THE CHIEF ENGINEER	Department of Agricultural Engineering, Government of Tamil Nadu, Madras
SUPERINTENDING ENGINEER (*Alternate*)	
DIRECTOR	Central Farm Machinery Training & Testing Institute (Ministry of Agriculture), Budni
SENIOR TEST ENGINEER (*Alternate*)	
DIRECTOR	Northern Region Farm Machinery Training & Testing Institute (Ministry of Agriculture), Hissar
SENIOR TEST ENGINEER (*Alternate*)	
DIRECTOR (AGRIL IMPLEMENTS)	Ministry of Agriculture (Department of Agriculture and Cooperation), New Delhi
SPECIALIST (IMPLEMENTS) (*Alternate*)	

(*Continued on page* 2)

(*Continued from page* 1)

Members	*Representing*
SHRI J. S. HANJRA	Partapsons Engineers, Jalandhar
SHRI R. S. HANJRA (*Alternate*)	
DR G. T. KURUP	Central Rice Research Institute (ICAR), Cuttack
DR S. M. ILYAS (*Alternate*)	
DR J. S. PANWAR	Indian Agricultural Research Institute (ICAR), New Delhi
SHRI PRATAP SINGH	Mohanlal Sukhadia University, Udaipur
SHRI K. K. SAGAR	Light Carts Private Limited, Meerut
SHRI V. K. SHARMA	State Farms Corporation of India Limited, New Delhi
SHRI M. D. SINGH	ICAR Research Complex for N. E. H. Region, Shillong
SHRI S. D. SAHU (*Alternate*)	
DR S. TIWARY	Birsa Agricultural University, Ranchi
DR S. R. VERMA	Punjab Agricultural University, Ludhiana
DR L. N. SHUKLA (*Alternate* I)	
SHRI SANTOKH SINGH (*Alternate* II)	
SHRI L. N. WAGH	The Maharashtra Agro-Industries Development Corporation Limited, Bombay
SHRI T. PURNANANDAM, Director (Agri & Food)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI K. ANBARASU
Assistant Director (Agri & Food), ISI

Indian Standard

SPECIFICATION FOR GROUNDNUT PLANTER

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 23 May 1985, after the draft finalized by the Sowing, Fertilizer and Manure Application Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 While quality seeds always ensure high crop yield, the method of placing the seeds in soil is equally important. Higher yields of groundnut and similar other crops can be obtained by planting the seeds at proper and uniform depth in lines. Planting helps in reducing the labour required for thinning of such crops. In order to achieve, the above goal, the planters have been developed. Most of these planters use metering mechanisms which are either cup-feed type or cell type devices. The cups/cells usually accommodate 1 to 2 seeds and are placed on the periphery at the spacing to get desired plant spacing along the rows.

0.3 In view of the increased manufacture and use of groundnut planters in the country, a need was felt to prepare this standard.

0.4 In preparation of this standard, assistance has been obtained from Central Institute of Agricultural Engineering (ICAR), Bhopal.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

1. SCOPE

1.1 This standard specifies material, construction, performance and other requirements of manual driven, animal driven and power operated groundnut planters.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definition given in IS : 9855-1981* shall apply.

3. TYPE

3.1 For the purpose of this standard, groundnut planter shall be of the following types depending upon the source of power:

a) Manual — Driven,

b) Animal — Driven, and

c) Power operated

i) Trailed, and

ii) Mounted

NOTE — Manual-drawn and animal-drawn planters shall be of trailed/pushed type.

4. SIZE

4.1 The size of the planter shall be expressed by the number of furrow openers and the maximum spacing in millimetres between two adjacent furrow openers. For example the size of the planter, having 3 furrow openers and 350 mm row spacing, shall be 3×350.

5. MATERIALS

5.1 The material for the construction of different components of the planter shall be selected from those given in col 3 of Table 1. The material shall conform to standards and grades as given in col 4 and 5 of Table 1.

6. HARDNESS

6.1 The furrow openers shall be hardened to have Brinell hardness between 300 and 450 HB when tested in accordance with IS : 1500-1983†.

7. CONSTRUCTIONAL REQUIREMENTS

7.1 Wheels — Wheels should have either bushes or dust proof bearings, they should be strong and should have lugs or pegs for getting proper traction under adverse soil conditions.

*Glossary of terms relating to sowing, planting, fertilizer and manure application equipment.

†Method for Brinell hardness test for metallic materials (*second revision*).

7.2 Axles and Shafts — Axles and shafts should be so attached that they can be easily removed for cleaning when desired.

7.3 Seed Boxes — These should be either separate or one continuous box with partitions. The boxes should have adequate capacity and be trapesoidal or cylindrical in shape with or without tapered bottom. The boxes should be adequately covered to avoid entrance of water. The boxes should be sufficiently strong and should not buckle when fully filled with seed. The height of the top of seed box from the ground level should not exceed 125 cm.

7.3.1 The thickness of mild steel and galvanized steel sheet for boxes shall not be less than 1·0 and 0·63 mm respectively.

7.4 Tines — Tines should be properly attached with the tool bar either by bolts or clamps.

7.5 Furrow Openers — Furrow openers should be provided with depth adjustment arrangements and may be of shovel, shoe, disc or runner type.

7.6 Delivery Tubes/Mechanism — The tubes/mechanism shall be of suitable length and shall be attached with seed outlets of the metering mechanism. There should not be any sharp bend in tubes.

7.6.1 The thickness of plastic tubes shall be 2·5 mm, *Min.*

7.7 Metering Mechanism — The seed metering mechanism components, that is, cup feed rollers and cell type plates should have cups/cells of the dimensions such that it accommodates 1 to 2 seeds and spacing of cups on the rollers and cells on the plates should be in conformity with the speeds of the shafts driving them and the plant spacing desired along the rows. The shape of cells should be such a size that the large side of this is not less than 15 mm and width is not less than 10 mm.

7.8 Transmission System — This may be sprocket and chain, belt and pulley or gear type. Provisions for tightening of belt and adjustments of chain shall be provided. Suitable clutches may be provided to stop the movement of metering mechanism when the wheels are turned in reverse.

8. PERFORMANCE REQUIREMENTS

8.1 The variation in dropping of seed in different seeding outlets shall be within $\pm$ 5 percent from the average quantity obtained.

8.2 The variation in quantity dropped per hectare and quantity specified to be dropped at particular setting shall be within $\pm$ 5 percent.

8.3 The percentage of visible damage to seed in the planter shall not exceed 0·5 percent.

TABLE 1 MATERIAL FOR CONSTRUCTION OF DIFFERENT COMPONENTS

(*Clause* 5.1)

Sl No.	Component	Material	Applicable Standard	Grade
(1)	(2)	(3)	(4)	(5)
i)	Frame and tool bar	Mild Steel	IS : 226-1975*	—
ii)	Wheel	Mild Steel	IS : 226-1975*	—
		Cast Iron pneumatic tyre	IS : 210-1978†	FG 200
iii)	Axles and shafts	Mild Steel	IS : 226-1975*	—
		High Carbon Steel	IS : 1570 (Part 2)-1979‡	—
iv)	Seed boxes	Mild Steel	IS : 226-1975*	—
		Galvanised Steel Sheet	IS : 277-1977§	—
		Seasoned Wood/	IS : 399-1963||	—
		Plastics	—	—
		Fibre glass reinforced plastics	—	—
v)	Tines	Mild Steel	IS : 226-1975*	—
		Carbon Steel	IS : 1570 (Part 2)-1979‡	C 55 Mn 75
vi)	Boot	Mild Steel	IS : 226-1975*	—
		Cast Iron	IS : 210-1978†	FG 200
vii)	Furrow openers	High Carbon Steel	IS : 1570 (Part 2)-1979‡	75 C 6
viii)	Delivery tubes/mechanism	Steel Ribbon	—	—
		Plastics	—	—
		Rubber	—	—
		Aluminium	IS : 617-1975¶	A-4 M

(*Continued*)

TABLE 1 MATERIAL FOR CONSTRUCTION OF DIFFERENT COMPONENTS — *Contd*

Sl No.	Component	Material	Applicable Standard	Grade
(1)	(2)	(3)	(4)	(5)
ix)	Seed metering mechanism	Cast Iron	IS : 210-1978†	FG 200
		Mild Steel	IS : 226-1975*	—
		Aluminium	IS : 617-1975¶	A-4 M
		Brass	IS : 292-1983**	—
		Gun Metal	IS : 306-1983††	—
		Nylon	—	—
		Bakelite	—	—
		Rubber	—	—
		Seasoned Wood	IS : 399-1963‖	—
x)	Bushes	Brass	IS : 292-1983**	3
		Gun Metal	IS : 306-1983††	—
		Nylon	—	—
xi)	Covering devices	Mild Steel	IS : 226-1975*	—
		Cast Iron	IS : 210-1978†	FG 200
		Seasoned Wood	IS : 399-1963‖	—
xii)	Pulley, sprocket	Cast Iron	IS : 210-1978†	FG 200
		Mild Steel	IS : 226-1975*	—
xiii)	Hitching mechanism	Mild steel	IS : 226-1975*	—
xiv)	Depth adjusting mechanism	Mild Steel	IS : 226-1975*	—
		Cast Iron	IS : 210-1978†	FG 200
xv)	Feed adjusting mechanism	Mild Steel	IS : 226-1975*	—
		Cast Iron	IS : 210-1978†	FG 200

*Specification for structural steel (standard quality) (*fifth revision*).

†Specification for grey iron castings (*third revision*).

‡Schedules for wrought steels for general engineering purposes: Part 2 Carbon steels (unalloyed steels) (*first revision*).

§Specification for galvanized steel sheets, (plain and corrugated) (*third revision*).

‖Classification of commercial timbers and their zonal distribution (*revised*).

¶Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (*second revision*).

**Specification for leaded brass ingots and castings (*second revision*).

††Specification for tin bronze ingots and castings (*third revision*).

8.4 The variation in dropping due to box filling at 1/4, 1/2 and 3/4 of rated capacity shall be within ± 5 percent.

8.5 The variation in seed rate should not exceed 5 percent of average values of seed rates at working speeds of 1·5, 2·4, 3·0, 5·0 and 8·0 km/h.

8.6 The variation in quantity of seed per metre of row length shall not exceed by 10 percent.

8.7 The planter shall be able to sow seed up to 100 mm deep.

8.8 The draft of animal-driven planter shall be not more than 100 kg.

8.9 The wheel slip at specified speed shall not exceed by 10 percent.

8.10 The seed rate shall be easily adjustable up to 125 kg per hectare.

8.11 The above requirements shall be tested in accordance with IS:6316-1971* as detailed below:

Performance Requirements (Ref to Cl No. in this standard)	Method of Test (Ref to Cl No. IS:6316-1971*	
	Type Tests	Routine Tests
(1)	(2)	(3)
8.1, 8.2 and 8.10	4.1.1 and 5.1	4.1.1
8.3	4.1.2	4.1.2
8.4 and 8.5	4.1.1	—
8.6	4.2	4.2
8.7	5.2	—
8.8	5.3.1	—
8.9	5.3.1 and 5.3.2	—

9. OTHER REQUIREMENTS

9.1 The manual planters shall have one furrow opener and the animal-driven planter shall have maximum of 4 furrow openers. The tractor drawn planters may have suitable number of furrow openers according to the horse power of the tractor recommended for the planter.

9.2 The row spacing shall be adjustable ranging from 300 to 450 mm preferably in steps of 25 mm.

*Test code for seed cum fertilizer drill.

9.3 When the furrow openers are lowered to plain surface, the openers shall not deviate by more than 5 mm from the line of alignment vertically and horizontally.

9.4 The weight of tractor-mounted planters including the weight of seed filled at rated capacity of the box shall be within the limit of 18·5 kg per drawbar horse-power of the tractor recommended for the planter.

9.5 Arrangement for quick cut-off of the seed when the planter is moving should be provided. This arrangement should be without disturbing the setting of metering mechanism.

9.6 Proper lubrication arrangement should be provided for all moving components except the portions exposed to seed.

9.7 On animal-driven planters the system of hitching should be adjustable to suit the varying height of animals. For tractor operated planters the system of hitching should be designed to suit the three point linkage and drawbar of the agricultural tractor. (*see* IS : 4468-1977* and IS : 4931-1977†).

9.8 Each planter shall be provided with instruction sheets containing full information on method of operation and installation of the planter. It shall also be provided with a manual containing maintenance instructions, calibration chart, etc.

9.8.1 Each planter shall also be supplied with necessary tools.

9.9 An etched metallic calibration plate indicating the metering position and quantity of seed shall be attached under the top cover of seed box.

10. ACCESSORIES

10.1 The following accessories may be provided with each planters:

a) Covering device,

b) Row marker,

c) Press wheel, and

d) Rollers/plates for planting.

11. WORKMANSHIP AND FINISH

11.1 The welding shall be satisfactory in all aspects and should not be brittle or porous.

11.2 The components shall be free from rust and shall have a protective coating to prevent surface deterioration in transit and storage.

*Dimensions for three point linkage of agricultural wheeled tractors.

†Specification for power bake-off shafts for agricultural practices.

11.3 The components should be free from pits, burrs and other defects that may be detrimental for their use.

12. MARKING AND PACKING

12.1 Marking — Each planter shall be marked with the following particulars:

a) Manufacturer's name and trade-mark, if any;

b) Model, code and serial number; and

c) Type and size.

12.1.1 Each planter may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

12.2 Packing — Packing of the planter and its components should be done as agreed to between the purchaser and the supplier to avoid damage in transit.

13. SAMPLING AND TESTS

13.1 One planter of each model shall be tested for all the requirements mentioned in this standard.

13.2 For the purpose of certification each planter of a model shall be tested for requirements mentioned in **8.1** to **8.3**, **8.6**, **8.10**, **9.1** to **9.7**, **9.9** and **11.1** to **11.3**.

13.3 The testing of the groundnut planter shall be done in accordance with IS : 6316-1971*.

*Test code for seed-*cum*-fertilizer drill.